PATENT COOPERATION TREATY

PCT

TRANSLATION INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P803324/WO/1	FOR FURTHER ACTION	See Form PCT/IPEA/416							
International application No.	International filing date (day/month/year	Priority date (day/month/year)							
PCT/DE2004/002572	20.11.2004	18.12.2003							
International Patent Classification (IPC) or nati	onal classification and IPC								
F01D15/10, F02C7/268, F02C3/113									
Applicant	_								
MTU AERO ENGINES GMBH									
 This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. 									
2. This REPORT consists of a total of	6 sheets, inc	cluding this cover sheet.							
3. This report is also accompanied by A									
a. (sent to the applicant and	to the International Bureau) a total of	sheets, as follows:							
sheets of the descrip	tion, claims and/or drawings which have	been amended and are the basis for this report and/or							
sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).									
1 1		ty considers contain an amendment that goes beyond							
the disclosure in the Box.	e international application as filed, as ind	icated in item 4 of Box No. I and the Supplemental							
b. (sent to the International)	Bureau only) a total of (indicate type and i	number of electronic carrier(s))							
(sent to the International)	our can only a total of (maleure type and t								
related thereto, in computer	readable form only, as indicated in the S	, containing a sequence listing and/or tables							
related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).									
4. This report contains indications relati	ng to the following items:								
Box No. I Basis of the	report								
Box No. II Priority									
Box No. III Non-establi	shment of opinion with regard to novelty,	inventive step and industrial applicability							
Box No. IV Lack of unit	ty of invention								
DON 110. 1									
Box No. VI Certain doc									
Box No. VII Certain defe	Box No. VII Certain defects in the international application								
Box No. VIII Certain obs	Box No. VIII Certain observations on the international application								
	a of this report								
Date of submission of the demand	Date of completion	nor unsreport							
Name and mailing address of the IPEA/EP	Authorized officer	Authorized officer							
Trans and maring address of the It EAVE	Authorized Officer								
Facsimile No.	Telephone No.	Telephone No.							

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/DE2004/002572

Box	No. I		Basis of the report		
1.			to the language, this report is based on the internation ler this item.	al application in the language in	which it was filed, unless otherwise
			port is based on translations from the original languag is the language of a translation furnished for the purpo		,
		ir ir	nternational search (Rule 12.3 and 23.1(b))		
		H p	ublication of the international application (Rule 12.4)		
			nternational preliminary examination (Rule 55.2 and/o		
2.	recei	iving Off	to the elements of the international application, this r ice in response to an invitation under Article 14 are		
	this i	report):			
	\square		rnational application as originally filed/furnished		
			cription:		11 (1 1/6 1 1
		pages			as originally filed/furnished
		pages*			
		pages*		received by this Authority on	
		the clai	ms:		
		nos.			as originally filed/furnished
		nos.*			18.10.2005 with
		nos.*	1-9	received by this Authority on	telefax
		nos.*		received by this Authority on	
	\bowtie	the drav	wings:		
		sheets	1/3-3/3		as originally filed/furnished
		sheets*		received by this Authority on	
		sheets*		received by this Authority on	
	Ш	a seque	nce listing and/or any related table(s) – see Suppleme	ental Box Relating to Sequence L	isting.
3.		The am	nendments have resulted in the cancellation of:		
		☐ tl	ne description, pages		
		☐ tl	ne claims, nos.		_
		☐ tl	ne drawings, sheets/figs		
		☐ tl	ne sequence listing (specify):		
		a	ny table(s) related to sequence listing (specify):		
4.			port has been established as if (some of) the amenda we been considered to go beyond the disclosure as file		
		tl	ne description, pages		
		☐ tl	ne claims, nos.		
		☐ tl	ne drawings, sheets/figs		
		☐ tl	ne sequence listing (specify):		
		a	ny table(s) related to sequence listing (specify):		
*	If ite	m 4 appl	lies, some or all of those sheets may be marked "supe	rseded."	

International application No.
PCT/DE2004/002572

					PCT/DE2004/0025	/2
Box	No. V Reasoned stateme citations and expl				step or industrial applicability;	
1.	Statement					
	Novelty (N)	Claims	1-9			YES
		Claims				NO
	Inventive step (IS)	Claims	1-9			YES
		Claims				NO
	Industrial applicability (IA)	Claims	1-9			YES
		Claims				NO
2.	Citations and explanations (Rule	70.7)				
	1. This	repo	rt makes	reference to	the following	

- This report makes reference to the following documents:
 - D1: PROVOST M J ED INSTITUTE OF
 ELECTRICAL AND ELECTRONICS ENGINEERS:
 "The more electric aero-engine: a
 general overview from an engine
 manufacturer" PROCEEDINGS OF THE 14TH.
 INTERNATIONAL SYMPOSIUM ON POWER
 SEMICONDUCTOR DEVICES & ICS. ISPSD'02.
 SANTA FE, NM, JUNE 4 7, 2002,
 INTERNATIONAL SYMPOSIUM ON POWER
 SEMICONDUCTOR DEVICES & IC'S, NEW YORK,
 NY: IEEE, US, 4 June 2002 (2002-0604), pages 246-251, XP010602915 ISBN:
 0-7803-7318-9
- 2. D1 is regarded as the prior art closest to the subject matter of claim 1. It discloses an aircraft engine that implicitly always has at least one stator, at least one rotor and at least one generator for generating electrical energy, a rotor implicitly having

International application No.
PCT/DE2004/002572

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

a rotor shaft and rotor discs that are driven by the rotor shaft and have rotating impeller blades, a stator implicitly having a housing and stationary guide blades, a generator implicitly having at least one stator and at least one rotor, and the electrical energy generated by the generator preferably being used to operate at least one attachment device or an ancillary unit of the gas turbine (this is found in all conventional aircraft gas turbines).

D1 also discloses the concept of the "More Electric Engine", which has been known for a decade and studied by all large engine manufacturers, and in which magnetic bearings are used for bearing, as generators and as starter motors. Of course, these are necessarily integrated into the interior of the gas turbine in such a manner that the generator rotor is associated with the rotor, and the generator stator is associated with the stator, thereby enabling the kinetic energy of the rotor from the generator to be converted into electrical energy.

The subject matter of claim 1 differs from the disclosure in D1 in that the or each generator rotor is associated with the rotor impeller blades, and pole pieces are integrated into the impeller blades or are associated with the radially outer ends of

International application No.
PCT/DE2004/002572

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

the impeller blades.

Therefore, the subject matter of claim 1 is novel (PCT Article 33(2)).

The searched prior art does not contain any further suggestion of integrating the pole pieces into the impeller blades, and therefore inventive step is established (PCT Article 33(3)).

- 3. The combination of features contained in dependent claims 2-9 is neither known from nor rendered obvious by the available prior art.
- 4. The subject matter of claims 1-9 is regarded as industrially applicable.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/DE2004/002572

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

- Contrary to the requirements of PCT Rule
 (a) (ii), the description neither cites
 document D1 nor indicates the relevant prior
 art contained therein.
- In claim 8 of the German version, the word "that" is missing after "characterized in".